

Remarks/Arguments

The Examiner rejected original claims 1-3, 6, 8, 9, and 11-15 of this application as obvious in view of an article by Grasselli and original claims 4, 5, 7, and 10 as obvious over Grasselli in view of US5,926,555 to Ort.

By way of this response, claim 5 has been re-written in independent form; claims 7 to 10 and 12 are unchanged; claims 1, 4, 6, 11, and 13 to 15 have been amended; claims 1 to 3 and 15 have been cancelled; and new claims 16 to 21 have been added.

In Grasselli a picture of a fingerprint pattern "is subdivided into a certain number of squares, called *samples*... For each sample, the 'predominant' slope of the ridge segments in the picture is determined, and digitized in one of eight possible values." (See page 255, last paragraph.) The result is a sampling matrix illustrated in figure 12 of Grasselli which can be encoded as shown in figure 13 of Grasselli. The sampling matrix can be used to find systems of parallel ridges (as described at page 256, third full paragraph) and the encoded matrix can be used to find triradii and pattern cores (as described at page 256, second full paragraph).

Ort creates a Ridge Angle Map (see figure 8) and a Ridge Frequency Map (see figure 9) from a fingerprint image. According to Ort: "Ridge angle and ridge frequency are needed by matched Gabor and Minutiae Filters ... and for core and delta location" (col. 17, lines 33 to 35). "[T]he Gabor and Minutiae ... filters, working as a pair, are designed to capture the phase discontinuity that occurs at a minutia" (col. 19, lines 12 to 14).

This application, as amended, has four independent claims: claims 1, 5, 13, and 14.

Claim 1 recites sub-dividing an “image into a plurality of cellular regions” where each cellular region has image information and comparing “image information of said each cellular region to each cellular region representation of a plurality of said cellular region representations, where each cellular region representation of said set of cellular region representations is defined by a set of values for a parameter set, said parameter set comprising parameters of ridge angle and phase offset”. Claims 5, 13, and 14 have similar language.

Neither Grasselli nor Ort contemplate a phase offset parameter for a cellular region and for this reason alone it is submitted that the claims could not be considered obvious in view of Grasselli or Grasselli and Ort. Further, a phase offset parameter for a cellular region makes no sense in the context of Ort since Ort does not contemplate sub-dividing a fingerprint image into cellular regions. It is also submitted that including a phase offset parameter in representing the cellular regions in Grasselli would have no purpose. More specifically, in Grasselli, the predominant slope of the ridge segments in each cellular region is used to identify triradii, pattern cores, and areas of parallel ridges. It is submitted that one skilled in the art would not consider that a phase offset would assist in these determinations. The inclusion of this information would therefore needlessly increase storage requirements in Grasselli.

Yet further, both Grasselli and Ort are concerned with processing in order to identify characteristics of a fingerprint. In contrast, the focus of the subject invention, as recited in claims 1, 13, and 14, is “to form [a] compact representation of said fingerprint image” (which can be used with pattern-based fingerprint matching algorithms). It is only in this latter context that phase offset has a purpose.

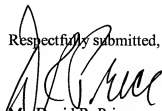
It is therefore submitted that claims 1, 5, 13, and 14 patentably define over the art of record. That being so, the remaining claims, which depend from one or other of the independent claims, also patentably define over the art of record.

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- Page 9 -

In view of the foregoing, early favourable consideration of this application is earnestly solicited.

Respectfully submitted,



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